

REMARKS

This is a full and timely response to the outstanding final Office Action mailed March 8, 2005 (Paper No. 02182005). Upon entry of this response, claims 33-41, 43-56, and 66-75 are pending in the application. In this response, claims 41 and 52 have been amended, claims 66-75 have been added, and claims 42 and 57-65 have been cancelled. Applicants respectfully request that the amendments being filed herewith be entered and request that there be reconsideration of all pending claims.

1. **Allowable Subject Matter**

Applicants note that claims 41, 52, and 63 do not stand rejected under a prior art rejection, although these claims are dependent on independent claims that were rejected under 35 U.S.C. §112, first paragraph. As argued below, Applicants traverse the rejection of the independent claims under §112, first paragraph. Applicants have also rewritten claim 41 as an independent claim which recites “such that the mapping maintains the same convolutional code while avoiding a bias in positive or negative levels,” rather than the objected-to language “the sign of the point being selected by the convolutional code to avoid a bias in positive or negative levels.” Applicants respectfully submit that claim 41 is in condition for allowance for at least these reasons.

2. **Rejection of Claims 33-65 under 35 U.S.C. §112, first paragraph**

Claims 33-65 have been rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Specifically, the Office Action states that “the sign of the point being selected by the convolutional code to avoid a bias in positive or negative levels’ has not been taught in the specification.”

Applicants respectfully disagree, and submit that support for the above limitation is found in Table 2. Although the specific phrase “sign of the point being selected by the convolutional code to avoid a bias in positive or negative levels” is not found in the specification, a person of ordinary skill in the art would understand that Table 2 demonstrates how convolution code bits and fractionally encoded bits map to a signal point with a particular level and sign. Thus, Applicants submit that Table 2, in combination with pages 13-15 of the specification, is sufficient to inform one of ordinary skill in the art that Applicants had possession of the claimed invention. Therefore, Applicants request that this rejection of claims 33-65 be withdrawn.

3. Rejection of Claims 42 and 64 under 35 U.S.C. §112, second paragraph

Claims 42 and 64 have been rejected under 35 U.S.C. §112, second paragraph. Specifically, the Office Action states that “the claims limitation, ‘a transmitter comprising: a receiver,’ has not been defined properly.” (Office Action, p. 3). Claims 42 and 64 have been cancelled, and thus this rejection of claims 42 and 64 is moot.

4. Rejection of Claims 33-37, 40, 42-49, 51, 53-60, 62, 64, and 65 under 35 U.S.C. §103

Claims 33-37, 40, 42-49, 51, 53-60, 62, 64, and 65 have been rejected under §103(a) as allegedly obvious over *Brehmer et al.* (U.S. 5,251,236) in view of *Betts et al.* (U.S 5,684,834) and *Eyuboglu et al.* (U.S. 5,875,229). Applicants respectfully traverse this rejection. It is well established at law that, for a proper rejection of a claim under 35 U.S.C. §103 as being obvious based upon a combination of references, the cited combination of references must disclose, teach, or suggest, either implicitly, all elements/ feature/steps of the claim at issue. *See, e.g., In re Dow Chemical, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988); In re Keller, 208 U.S.P.Q.2d 871, 881 (C.C.P.A. 1981).*

a. Claims 33 and 46

Applicants respectfully submit that claims 33 and 46 are allowable for at least the reason that the proposed combination of *Brehmer et al.* in view of *Betts et al.* and further in view of *Eyuboglu et al.* does not disclose, teach, or suggest at least the feature of “the sign of the point being selected by the convolutional code to avoid a bias in positive or negative levels” as recited in claims 33 and 46.

The Office Action alleges that the above-recited feature is disclosed in *Eyuboglu et al.*, FIG. 6 and Col. 12 line 25 to Col. 13 line 23. Applicants respectfully disagree. FIG. 6 illustrates a symmetric 1-dimensional constellation, with the same number of positive and negative levels. Col. 17, lines 9-15 describe the advantages of using a symmetric constellation. However, the cited passages do not describe how a particular point in the constellation is selected. In contrast, Applicants’ invention as defined by claims 33 and 46 uses the output of the convolutional encoder to choose the sign of the constellation point, such that no bias occurs.

Furthermore, although *Eyuboglu et al.* discusses the general use of a Trellis code, *Eyuboglu et al.* does not disclose, teach, or suggest that the constellation encoder uses Trellis coded bits to select the sign of the constellation point, as recited in claims 33 and 46. *Brehmer et al.* discloses that output from the Trellis encoder feeds into the constellation encoder, but does not disclose, teach, or suggest that the Trellis coded bits select the sign. Finally, *Betts et al.* contains no discussion at all of a convolution encoder.

Accordingly, the proposed combination of *Brehmer et al.* in view of *Betts et al.* and further in view of *Eyuboglu et al.* does not teach the above-described feature recited in claims 33 and 46. Since the proposed combination does not teach at least this feature, a *prima facie* case establishing an obviousness rejection by *Brehmer et al.* in view of *Betts et al.* and in further view

of *Eyuboglu et al.* has not been made. Thus, claims 33 and 46 are not obvious under the proposed combination, and the rejection should be withdrawn.

b. Claims 57-65

Claims 57-65 have been cancelled. Therefore the rejection is moot, and Applicants request that the rejection be withdrawn. Applicants take this action merely to reduce the number of disputed issues and to facilitate early allowance and issuance of other claims in the present application. Applicants reserve the right to pursue the subject matter of these cancelled claims in a continuing application, if Applicants so choose, and do not intend to dedicate any of the cancelled subject matter to the public.

c. Claims 34-37, 40, 42-45, 47-49, 51, and 53-56

Since claims 33, 46, and 57 are allowable for at least the reasons discussed above, Applicants respectfully submit that claims 34-37, 40, 42-45, 47-49, 51, and 53-56 are allowable for at least the reason that each depends from an allowable claim. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q. 2d 1596, 1598 (Fed. Cir. 1988). Therefore, Applicants respectfully request that the rejection of claims 34-37, 40, 42-45, 47-49, 51, and 53-56 be withdrawn.

5. Newly Added Claims

Applicants submit that no new matter has been added in the new claims 66-75, and that support for these new claims is found at least in pages 13-15 and Table 2. Applicants also respectfully submit that new claims 66-75 are allowable over the cited references. Specifically, independent claim 66 is allowable for at least the reason that the cited references do not disclose, teach, or suggest at least the feature of “a constellation encoder configured to map the point on the signal space constellation based upon the output symbol and the convolutional code, the sign

of the point being selected by the convolutional code". Therefore, Applicants request that the Examiner enter and allow the above new claims.

CONCLUSION

Applicants respectfully request that all outstanding objections and rejections be withdrawn and that this application and presently pending claims 33-41, 43-56 and 66-75 be allowed to issue. If the Examiner has any questions or comments regarding Applicants' response, the Examiner is encouraged to telephone Applicants' undersigned counsel.

Respectfully submitted,

**THOMAS, KAYDEN, HORSTEMEYER
& RISLEY, L.L.P.**

By: 
Karen G. Hazzah, Reg. No. 48,472

100 Galleria Parkway, NW
Suite 1750
Atlanta, Georgia 30339-5948
Tel: (770) 933-9500
Fax: (770) 951-0933